



SEQUENCE LISTING

<110> Keeping, Hugh S
Reichner, Jonathan S

<120> Treatment for Bone Disorders

<130> 21486-028

<140> 09/507,239

<141> 2000-02-18

<160> 7

<170> PatentIn Ver. 2.0

<210> 1

<211> 153

<212> PRT

<213> Homo sapiens

<400> 1

Met Gly Leu Thr Ser Gln Leu Leu Pro Pro Leu Phe Phe Leu Leu Ala
1 5 10 15

Cys Ala Gly Asn Phe Val His Gly His Lys Cys Asp Ile Thr Leu Gln
20 25 30

Glu Ile Ile Lys Thr Leu Asn Ser Leu Thr Glu Gln Lys Thr Leu Cys
35 40 45

Thr Glu Leu Thr Val Thr Asp Ile Phe Ala Ala Ser Lys Asn Thr Thr
50 55 60

Glu Lys Glu Thr Phe Cys Arg Ala Ala Thr Val Leu Arg Gln Phe Tyr
65 70 75 80

Ser His His Glu Lys Asp Thr Arg Cys Leu Gly Ala Thr Ala Gln Gln
85 90 95

Phe His Arg His Lys Gln Leu Ile Arg Phe Leu Lys Arg Leu Asp Arg
100 105 110

Asn Leu Trp Gly Leu Ala Gly Leu Asn Ser Cys Pro Val Lys Glu Ala
115 120 125

Asn Gln Ser Thr Leu Glu Asn Phe Leu Glu Arg Leu Lys Thr Ile Met
130 135 140

Arg Glu Lys Tyr Ser Lys Cys Ser Ser
145 150

<210> 2
<211> 614
<212> DNA
<213> Homo sapiens

<400> 2
gatcgttagc ttctcctgat aaactaattg cctcacattg tcaactgcaaa tcgacaccta 60
ttaatgggtc tcacctccca actgcttccc cctctgttct tcctgctagc atgtgccggc 120
aactttgtcc acggacacaa gtgcgatata accttacagg agatcatcaa aactttgaac 180
agcctcacag agcagaagac tctgtgcacc gagttgaccg taacagacat ctttgcctgcc 240
tccaagaaca caactgagaa ggaaaccttc tgcagggtcg cgactgtgct ccggcagttc 300
tacagccacc atgagaagga cactcgctgc ctgggtgcga ctgcacagca gttccacagg 360
cacaagcagc tgatccgatt cctgaaacgg ctgcacagga acctctgggg cctggcgggc 420
ttgaattcct gtcctgtgaa ggaagccaac cagagtacgt tggaaaactt cttggaaagg 480
ctaaagacga tcatgagaga gaaatattca aagtgttcga gctgaatatt ttaatttatg 540
agtttttgat agctttatatt ttaagtatt tatatattta taactcatca taaaataaag 600
tatatataga atct 614

<210> 3
<211> 597
<212> DNA
<213> Homo sapiens

<400> 3
ttctcctgtc cggatgcgca gggcagggtc gaccgtcgag ctgcacccac agcaggctgc 60
ctttggtgac tcaccgggtg aacgggggca ttgcgaggca tccccctcct gggtttggtc 120
cctgcccacg ggcctgacag tagaaatcac aggtgtgtgag acagctggag ccagctctg 180
cttgaaccta ttttaggtct ctgaaccccg ctctcctctt agactcccct agagctcagc 240
cagtgtctca cctgaggctg ggggtctctg aggaagagtg agttggagct gaggggtctg 300
gggctgtccc ctgagagagg ggccagaggc agtgtcaaga gccgggcagt ctgattgtgg 360
ctcacctcc atcaactcca ggggcccctg gccagcagc cgcagctccc aaccacatat 420
cctctggggg ttggcctacg gagctggggc ggatgacccc caaatagccc tggcagattc 480
cccctagacc cggccgcacc atggtcaggc atgcccctcc tcctcgctgg gcacagccca 540
gagggtataa acagtgtgag aggtgggcgg ggcaggccag ctgagtcctg agcagca 597

<210> 4
<211> 2700
<212> DNA
<213> Mus musculus

<400> 4
tctagaaagc actgttccct taaaatcatt caccacctct ggctcctaca atcttccctg 60
cctcccttcc acacagatcc ctgagccttg aggagagggc tgtgataaat catccccctt 120

ggagtgagca gtctgaagtc tctcattctc catgcactgt cttattccgt cccgcgggat 180
 tcagttattc gtgggtgcga gggggaccac gaacctggaa ggaaatggga ggaaaagaaa 240
 gagagcggac gaccaagtag attgaacata tcaaggtctc gtttattagg ctgaggtgcc 300
 ttctttttta agcatacatc acggggaata tgggaggggt cgaggagaga ttatacaaaag 360
 aacaaagaag tgggcatctg ctgacatggg ggccgaagtc aggcgccagg cagcgggcac 420
 tctggatttt atctctggaa cattgatcct ccttgacagc cttgggggtc aggctgggct 480
 caggcgtaac tcatgtcctt ggatggcacg ggaactcagg aagagatagg gaagagggga 540
 ctataattca gcttttacag cctcaggtgc caagaaagga atagggagga aggggggtga 600
 taaccagctc ttagtacaag gccatttggc ctgttaggga gattgtgaag ggctcacttt 660
 ctacagggat ggtctctgac actgtctggc tgtgtgtctc cccatctact gcaagactgg 720
 gcttttctga tgaagtgtaa gcctagttag ggtgccctgt tcattagaag tcattttgca 780
 gtcactcagc agaattattag tagtgggttt ctttccccct gagagctcac aacctgtcta 840
 gtctcgggtt ctagcaccg tgaataattc tattttcaga agttaacatc cttcccctca 900
 gacacctttg aagcttgtgg gtgtttgggt ttctgtgccc tctacctgca cgtctctcca 960
 tacccaactg tgagcatttg aaagcgtgtg ctagagtttc ttgttttagct ccccatgtcc 1020
 tataaaacac tttggtttg tagagaactg agcagttcaa actttgctca actgagctta 1080
 tgggggtgaa ttgaatacaa gcaataaaaa ggagcttatt caacttctct tttgtggttc 1140
 tctattttat ttttaaatgc tgaataactt ttcttttagct aaatcatctg aagaatctaa 1200
 cagagtcact actctggcaa caatactgga caacaatggc atttattgat ttctgtaaaag 1260
 tagaagtcaa cagagaagaa tatggggata aagaatatag ggataaagaa gacaaccaac 1320
 cagagctccc aggttctaaa ccaccaacca gggagtacac atggaggagc ccatggctcc 1380
 atctgtatat gtagcagagg atggcctagt ccatcatcaa tgggatgaga ggcccttggg 1440
 cccatgaagg cctgatatcc cagtgtcggg gaatttgagg gcaggagga gagagtggat 1500
 gggtaggtgg gggaacaccc tcatagaagc aggagggggg gtgggatagg gggttttggg 1560
 gtgtgggaat tgggaaaggg gataaacctt gaaacgtaaa taaataaaat atccaataaa 1620
 aaaatcttct ggaaaagaaa agatatacaa aatacaaagg cagtttcctt tgcaaactta 1680
 ggaaatgttc agtttgccaa tgcattgagc aagtttattt tccagtaatt attcaataac 1740
 catgaactgc tctctggcag tgctagtaat tattctctac tcataggaaa aaaattacat 1800
 aagaagacga ctagaaataa gattatacga tgtgcagtgg cctcatttac acagcaaagg 1860
 gccacatagg ggataatccc aaggacttgt tctatgaaag gttacatcag ctcccttggg 1920
 tcaacctcga acgctgtaac gttcacagtc agcattgtgc tttagcaaag cttaggtaat 1980
 ctgactgggt taataatatc agttttgact tacaagcctc tgaaatatgt ttcagggaga 2040
 aatataaagg aatcaatatt aaactatctc ttggcatcaa ctcatctcct aattcagtac 2100
 ttttagaccc atgcagtgt gtgtgaaagc cagctttcct ttctttcaac acagtgaata 2160
 cctgtatcat tgtgaaagct taaatgctta agtcttttgc tatttatttt atttgaaatg 2220
 cagtatatta ttatatatat tcagaactct aactaccatc ttctcctcac ctttcaatta 2280
 aatcccacaa tgcaagcctc ttggcagaag gccacacctt catgtttatt caactgaggc 2340
 tgaatcttga aaatgtgttg aagtttggga ttctctgggt agaaccaca gcctgacgtt 2400
 gtgctggcca cagctgtgat tggctgttga gaggcggaga agggtttata gtcagcaaga 2460
 gcaagtgaat gagtgagtga cagccgggag aacaatccgt gccactcact cgactcgagc 2520
 caaggacctg gccgaaagga aggttaaggt aatgggcaag gacctcacag ccaggtaatg 2580
 ggcaaggacc tcacagccag gcacctcagt cttccctgtg tggctttggc ttggagtttg 2640
 tagctgcagc atggatctta ctgcacagtg cacagtgggt ctagttgaac tttgcttgc 2700

<210> 5

<211> 1093

<212> DNA

<213> Rattus norvegicus

<400> 5

```
aagcttaggg aacattcagc ctgccaacat acgcgggaag tttattttcc agtgatcctt 60
tcaatggccg tggaactgct ttctggcagt gctagtaatt cttctctcct cagagggaaa 120
gatacatagg aagaggactt agaaataagc ctgagagtat acagcgcttg atgacctcac 180
tcgcacaacg aaaggccatg tcccggatga tgccaactac tttgttcgat gagagttaa 240
tcagcttctt ggtctgagcc tcaaatgttg tagctttcac agtcagcaca gttagcaaag 300
ccttggcagc cgggctggct ttacaatact gattctgact tacgagcctc tgaaatgcat 360
ttcagaaagg aatataaagg gatcttcact gaacacctct tgtcatcaac tcgtttccta 420
attcagtgtt ttagggctcg ggcagtgttg tgtttaacag aggctagttt tcctttcttt 480
caacatagta aaaacctgta tcattgtgaa agtttaaatg ctttaagtcgt ttgccattta 540
gtttatttga aatgcagtgt attattatag atattcagaa ctctaactac catcttctcc 600
tcagccttca attaaatccc acaatgcgac ctcttggcag caggcgcgcc tttcatgttt 660
attcaactga ggctgagttc tgaaaacgtg ttgtagttac ggattttctg gtgagaacct 720
acagcctgac gtcgcaccgg ccgtgaccgt gattggctgc tgagaggaga agaagggttt 780
ataggtcagc aagagcgagt gaatgggtga gaggcagccg ggagaacaat ccgtgccact 840
cactcacttg ctctctccag ccaggactgc cgaaggtaag gtaatgggcc agcacctcac 900
agccacctgc ctgaggttct ctgtgtggct ttggcttggg atttgtcgtt gaagcatgga 960
tcttactgct tgggtgcaca tggctctggt tgaactttag cttgctgtga aatgggacct 1020
ctgagtttag gttctttcca aagaccaggc tgggtaacgt aagcatgcag ttaaactgct 1080
tcagattggt acc                                     1093
```

<210> 6

<211> 1627

<212> DNA

<213> Mus musculus

<400> 6

```
gaattctttt cccattggta acgtaaaaga ccactactta attgagttag cttaggetca 60
acaaacagac tttatacaac ttaacttcct tcacatttat gaaaaattaa tcagtatcgg 120
cactgagaag gcagaaacag gtagaactcc atgagtttca ggccagcctg atctacatag 180
gaattctagg acaagcaggg ctaggtagag ataccctatc tcaaaaaacc aaaacccaaa 240
aacattacgt ttaagcagat ttagttttga ccctaaatgt ttgtcttagt gaagggtcca 300
aatgctctta gcaaagtgtt ctttgtgtag ttggagagtg ttgtgtgcta atacagctat 360
caagcacttc tgtttagaca ccgaagatct tcttaactct ccatcaggtc tggagagctg 420
ttcaaactct ctattacaac caagttagga agaggaaggc aattcctgag gaaagtggca 480
ttcttaaata tgattggccc ttaagatgc tcaaagaacc aagaacctg cagtgtaaat 540
aatagcaaag tgtttactat ggaagtgcag cttcgaggaa actcccttcc tatcactgga 600
acctgtccaa tcctaccta catgaatatg ttgtttaatt ctctcagtat aaagctctga 660
agatgctgtt gctggatagt gatttaatat ttctgatcat atgtgtttga catctttcag 720
tagtgtgaca taaaacatg gacacatccc taagctggta cacagagact ccaattgcct 780
agtgtggagc tcataagcta gagaaatggc tcagggatca tcttgtatat ccagggtcgt 840
agagaatgat gggttcaggc aagtactttt tcttttctgg aagcacagcc tgttttccta 900
ttctgtactc tatagtttac acatatagtg gagcaaagaa tgaaagctgt gtctgtggtg 960
tgtgtgtgtg tgcactctgt acttacgcac agatacctta caccatgttt cacctttgga 1020
acagctattt ttaaatttag tttgtattaa attaatagat tataaagaaa aacccaaaac 1080
ctttatgtca gtgttttagat taaatcagaa aggtttcctg aagttactgt ttataaatc 1140
ttttaagat cccttaggca gtgtcaagac tgttgcacgc ggacagccgc ttgaattata 1200
```

gcgcaccaac tttaatatgt acctcaggaa tgataggggt cttaaatagc cagtcgtatt 1260
tactagagaa acctagagtt ttcttagatt gccgacctaa gcaagaggag aaatgcaggg 1320
tgacagagtc taagtggctc ttttcagata tatcacactg attatctata ttttaagacac 1380
aaaacagtct tccaggagct atttaattaa gtgaaagtaa gtctagtcct tttggaacca 1440
aaggtctcag tgagccaacg taccggcgag cgagggagtg gggcggttatt acagcctcat 1500
aggcacactg actcttttaa cccccacatc agggatccta agcagtgatt ggttgagaaa 1560
attatcaaac tgaattttaa tttcagcagg tacaaaattg tcacgcaaaa agcccaggac 1620
agtgtgc 1627

<210> 7

<211> 3240

<212> DNA

<213> Mus musculus

<400> 7

gtaagatgga ctccctcctg ccaggagcca actgtctcct gttgagagaa tctccagctg 60
cagagatgag ggtgacttgg gataaagttt ttaactcttc aggtctacac tatatattaa 120
agataatgtg tgattcagga aggggtgcta agccatctga tgagaccatc tgataagacg 180
acgaatcact ggggagcaga actgattttg cccagctata ttgttgagac tttatctcct 240
ataggaaaaa cctaagatga aacaaacatt ctaattgtat taattaaaaa aaaacagtac 300
ctgaaggggt ttatgtatag ttctctatag ctctattttt gttattttca ttcaggaaaa 360
tacttttaag agctataaac ctagtcaaa ggtgttttaca gccttgtcct tggaatgttg 420
ggagtgttgg gatttaacaa atgagaatca cacactgtct tcctcttcga gacagagaca 480
tggtatgatgc agtgtccaaa caccagctct tcctgaaaaa taagctgggt ttgggggttt 540
gatttaaatca tggctcttca tgatttcaag gtctgcctag tgtttatgat taaagctcta 600
tggcgaaaag aattgtgggt cctcccaggg ctcagtatct gcctgatatt aacttccgat 660
gttactgac tggacctaat aaataaatct ccatttaaac ttagtatctt gactcagagt 720
caacttagga tctgggagcg taattttctg gcatgtgatg tgaagtttct aaaagtagac 780
gctcaaacag ttttatgtag aaaacacaca gatctgtcaa gctgattttt cagctccaaa 840
tttcatgata ataggtttag ggaaaacaaa gacatattgc ctcaagttgg caaaaattga 900
ggtggaaatt tgaatgtggg cactttgaat ggttttgatt taagaaaaaa tagataactt 960
gtattgtaaa tatctttaa atatttttat tcattccctg agaaatttgt gtggtatgtt 1020
ctgattgctc tcccagatc tgcctttgtt ctctactcac acaactttgt gctctttttg 1080
taaagaaaca aaacaagagc catgcacacc agtttgtgct cctcaaatgt actcagctgt 1140
gtggccatct gctgggttct ggttgctta ccaggggcta cattcttga gaacactgcc 1200
tttctttttt tcccaccacc tattgttaat tgttcttcat gtccagcttt cctctccttg 1260
ctgggatttg gtctgacttg ggcttgacg gtcgggtgca ggctgtcaga agcgtgtga 1320
agatagctcg gtagtttaa gtctacctca ggcattccaa caaggccctc acaatgaggc 1380
tttgcgtttc ctggtcttct tagtgagtga tatattcatt ctaactggct attcatacat 1440
ttcatctagt gtggggcaat aaatgggaca atttaaagga gcctcaattc taatgactgg 1500
ttatttccac cagggtcttt gatatggttg acctgccttg ccaacagggt caagtatcat 1560
atatgtcagt gctggagtgg aaatgtggtg tgtgtgtgtg tgtgtgtccg tgtgtgtgtg 1620
tgtgtgtgtg tgtgtgtaag gagggatgga aggtggatgg tgggagacag gaattctcag 1680
atggtcagat ttcagtttag aaattatatg tgtgtgtgtg tgtgtctgtc tgtctgtctg 1740
gactttattg caggtacctt tccaggacca gggatcccca gttcacactc ggttttagagt 1800
tgccaagctc aagtataagc ttggcttggg agacagatgg ccttcacctc aactcctggc 1860
cctggggctt tgtctcaagg cacctcatth tagttttag aataattgaa gggacccag 1920
cttttcttag ctttctcttg acagctataa ggaaggggta agcatctttt tcagagatcc 1980

tagaattgtg	ttctcacttc	tgtcaagtaa	taaacaatat	atattcattg	atgttttatt	2040
ctattcccct	attaaccttg	gattttaatc	aaggacattt	tatgatgtgc	aaggtggtaa	2100
tcattaattc	ttgtggaagg	tcacaagata	ggagaaaaca	attctttcta	tagtaaaaca	2160
ccatgataca	aataaattta	gttttagaaa	atgggaacct	gaagttttga	ttcacataga	2220
tttttatagt	tttacaggct	ccattccaat	gtatgaaaaa	tatgtatctg	attctgtgaa	2280
tttg cattgc	aaagggtgaa	agatttcact	cttgaagcct	ctctccttca	gctcctccct	2340
cagtccgaga	ctgcatagt	cccgggtaag	ggtgggggtg	cctttgtcct	caggagtgc	2400
tgttcagcag	caggctctgc	aaggtgacct	ttgctttgct	cagaagacac	tgatgatcaa	2460
gatgctggcg	tgggctccga	gacctgatgc	cagtgaggag	gaagatgggg	tagctaggca	2520
acttcaaaac	agtgc aatgt	gctgccagca	tcgagcgagc	ggaggggtgca	caagctgatg	2580
ctgtgtgagg	aaggggagcta	aagatgcctt	cagaaagctt	tttgggggtg	attcttctgc	2640
caacccttag	gatattgtga	gctacagagt	tattaaacca	gactgaggaa	acaaaagccc	2700
aataaaagcta	ttgaaagtgc	ccaagctcag	agagcagata	gcaggggaag	gatttgaatt	2760
cagggatctg	aaaccaaatac	ctgtgttctc	tctcctagcc	taaactctct	cttccttaaa	2820
cactgtaaga	ggaagatttc	ttcctcttac	tgggataacg	ccaattcta	tatagaccag	2880
gtgggaaatt	acaagtgcct	tatcatttac	aatctacttt	tagttaatga	tgcttaaagc	2940
tagcccagga	gagacgttac	cctcatggat	aacagcatag	ggccagagcc	acgagctatg	3000
tactctgtat	cttcatggct	gttgcttcca	caggcaggta	gagtcagaag	ccatgacagt	3060
cctgagcatg	cagaggcccc	cacataccca	ggtttatttc	tggaacctgg	ggtgttttct	3120
cacattagta	ctttctcctt	gtcctagaaa	agggccaaat	gtaagaccaa	aatattgggg	3180
tactgtggct	gtcatctttc	atcttatgac	ccgttttgtg	gtgttctttg	ttctaaacag	3240